REMARKS

Of claims 1-13 pending in the application, the Office examined all and rejected all. With this paper, new claims 14 and 15 are added, but no claims are canceled, and so claims 1-15 are now pending in the application.

Rejections under 35 USC §102

At page 2 of the Office action, claims 1-3, 7-8 and 12 are rejected under 35 USC §102 as being anticipated by U.S. Pat. No. 5,356,833 to Maniar *et al.* (hereinafter Maniar).

Claims 1, 8 and 12 are the only independent claims. All three claims recite a praseodymium oxide-bearing layer upon which a praseodymium silicide layer is formed.

In rejecting the claims, the Office cites col. 3, ll. 48-59 for teaching a praseodymium oxide-bearing layer, and col. 4, ll. 23-33 for teaching a praseodymium silicide layer formed on the praseodymium oxide-bearing layer.

Applicant respectfully submits that what is disclosed at col. 3, ll. 48-59 is the definition of an "intermetallic," which can include praseodymium, but is not indicated there as including praseodymium *oxide*. An intermetallic is defined there as follows:

> The general formula of an intermetallic formed by the present invention has a general molecular formula of AB.sub.3, wherein A is yttrium, zirconium, niobium, hafnium, tantalum, or any one of the elements referred to as the "lathanides" (sometimes called the "rare earth elements") and B is rhodium, iridium, palladium, or platinum. The lathanides include lanthanum (La), cerium (Ce), praseodymium (Pr), neodymium (Nd), promethium (Pm), samarium (Sm), europium (Eu), gadolinium (Gd), terbium (Tb), dysprosium (Dy), holmium (Ho), erbium (Er), thulium (Tm), ytterbium (Yb), and lutetium (Lu). In terms of atomic numbers, A is an element having an atomic number in a range of 39-41 or 57-73, and B is an element having an atomic number of 45, 46, 77, or 78. A material that includes at least one of the A elements is hereinafter referred to as the "A-material", and

> a material that includes at least one of the B elements is hereinafter referred to as the "B-material."

Nowhere does Maniar ever mention praseodymium oxide.

At col. 4, ll. 23-33, applicant respectfully submits that Maniar discloses only that a potential problem can arise if an intermetallic is formed on a silicon layer, namely a silicide layer may be formed, in which case the thicknesses of the A-material and that of the B-material may have to be adjusted (to compensate for a silicide reaction, not explained further), but that if the intermetallic is deposited on an existing silicide layer, no such adjustment is needed. Nowhere at the cited location (or elsewhere) does Maniar teach or suggest a praseodymium silicide layer formed on the praseodymium oxide-bearing layer. The text at col. 4, ll. 23-39 is:

> The intermetallic member 41 does not need to be formed on an insulating layer, and the intermetallic member 41 may be formed on a dielectric layer, such as a gate dielectric layer, ferroelectric layer, and the like, on a semiconductor or semiconductor-containing layer, or a metallic or metal-containing layer. If the intermetallic member 41 is formed on a silicon layer, *a silicide layer may be formed*. Usually, the silicide layer does not cause any problems, but the thicknesses of the A-material or B-material layers may need to be adjusted to compensate for a competing silicide reaction. The intermetallic member 41 may be formed on a previously formed silicide layer. In this case, the thicknesses of the A-material or B-material layer do not need to be adjusted for a competing silicide reaction because the A-material, B-material, or intermetallic member 41 should not further react with the silicide layer. [Emphasis added.]

Simply because an intermetallic may include praseodymium, and because a silicide may be formed in depositing an intermetallic, it does not follow that Maniar discloses a praseodymium silicide layer formed on a praseodymium oxide-bearing layer.

First, a silicide layer is not a praseodymium silicide layer. Just because an intermetallic could include praseodymium,

it can hardly be concluded from Maniar at the cited location that whenever the intermetallic includes praseodymium, a praseodymium silicide layer is formed. It may be that a silicide layer may be formed only for some intermetallics, not including praseodymium, and it may be that no silicide layer may be formed at all, regardless of the intermetallic. Maniar teaches only that a silicide *may be formed* in case of depositing an intermetallic on silicon.

Second, although Maniar teaches that praseodymium is included in some intermetallics, praseodymium *oxide* is not disclosed as an intermetallic or as an intermetallic component, and in fact at col. 1, ll. 20-27, Maniar explains that intermetallics form very little, if any oxide (at least when they are subjected to an H2/O2 flame at temperatures of up to 2800 Celsius, and col. 1, ll. 27-28, Maniar seems to suggest that intermetallics are resistant to forming oxides in general, not simply when exposed to H2/O2 flame).

Further with regard to claim 12, which recites a process for the production of a praseodymium silicide layer on a praseodymium oxide-bearing layer in which the praseodymium silicide layer is produced by thermal conversion of praseodymium oxide by means of local energy input (such as provided by a laser, as in claim 11) into regions near the surface of the praseodymium oxide-bearing layer, the Office cites col. 3, ll. 48-68 and col. 4, ll. 1-40. Applicant respectfully submits that nowhere at the cited location does Maniar teach or suggest using local energy input into regions near the surface of a praseodymium oxide-bearing layer to produce a praseodymium silicide layer. Maniar teaches only depositing first the A-material and then the B-material of an intermetallic (or first the B-material and then the A-material), and etching as necessary. Etching is not a local energy input, i.e. it is not an endothermic process, it is exothermic.

Further, the etching described at the cited location cannot be said to be a local energy input near the surface of a praseodymium oxide-bearing layer; as mentioned above, praseodymium oxide would not be present in the situations described in the cited text.

Accordingly, applicant respectfully requests that the rejections under 35 USC §102 be reconsidered and withdrawn.

Rejections under 35 USC §103

The claims not rejected under 35 USC §102 are rejected under 35 USC §103 as being unpatentable over Maniar, as applied to claims 1, 8 and 12, in view of one or more other references.

By virtue of the dependencies of the claims rejected under 35 USC §103, since the independent claims are believed allowable for the reasons given above, applicant respectfully requests that the rejections under 35 USC §103 be withdrawn.

New claims

New claims 14 and 15 are provided as part of correcting an error in multiple-dependent claiming. Claim 7 depends multiply from claims 3 and 4, each themselves originally multiply dependent, and so claims 3 and 4 are amended by this paper to be singly dependent, and new claims 14 and 15 are added to claim the subject matter omitted from original claims 3 and 4.

Conclusion

For all the foregoing reasons it is believed that all of the claims of the application are in condition for allowance and their passage to issue is earnestly solicited. Applicant's attorney urges the Examiner to call to discuss the present response if anything in the present response is unclear or unpersuasive.

Respectfully submitted,

Nov. 28, 2005
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